

1 **WHAT IS CLAIMED IS:**

2 1. A direct-light illuminating backlight unit with shielding mask for a
3 liquid crystal display, comprising

4 a case having a front opening as a light-emitting face, a frame and a
5 back connected to the frame, wherein the light-emitting face has at least one
6 brighter region and at least one dimmer region;

7 at least one light-emitting source mounted inside the case align with the
8 back, wherein the at least one brighter region is immediately in front of the
9 light-emitting source, and the at least one dimmer region is away from the
10 light-emitting source; and

11 at least one shielding mask mounted in the case in front of the light-
12 emitting source, wherein each shielding mask has a pattern of opening that
13 allow light to be emitted from the otherwise opaque mask, wherein at least one
14 region immediately in front of the light-emitting source has smaller opening
15 ratio and hence higher blockage to the light, wherein at least one region away
16 from the light-emitting source has larger opening ratio and hence lower
17 blockage to the light, and thus reduces uneven luminance between the at least
18 one brighter region and the at least one dimmer region.

19 2. The illuminating backlight unit as claimed in claim 1, further
20 comprising a reflective layer formed on the back to reflect light radiated
21 backward from each light-emitting source to the front opening.

22 3. The illuminating backlight unit as claimed in claim 2, wherein the
23 reflective layer is composed of multiple reflective protrusions, each protrusion
24 having two inclined faces and a salient aligned with the corresponding light-

1 emitting sources, wherein each inclined face project reflected light onto an
2 adjacent dimmer region.

3 4. The illuminating backlight unit as claimed in claim 3, wherein the
4 reflective layer is formed integrally with the back.

5 5. The illuminating backlight unit as claimed in claim 1, wherein the
6 shielding mask is curved.

7 6. The illuminating backlight unit as claimed in claim 1, wherein the
8 shielding mask is flat.

9 7. The illuminating backlight unit as claimed in claim 1, wherein the
10 opening pattern of the shielding mask is a group of through holes.

11 8. The illuminating backlight unit as claimed in claim 1, wherein the at
12 least one light-emitting source is a tubular lamp.

13 9. The illuminating backlight unit as claimed in claim 1, wherein the at
14 least one light-emitting source is a straight tubular lamp.

15 10. The illuminating backlight unit as claimed in claim 1, wherein the
16 at least one light-emitting source is a looped tubular lamp in U shape.

17 11. The illuminating backlight unit as claimed in claim 1, wherein the
18 at least one light-emitting source is a looped tubular lamp in W shape.

19 12. The illuminating backlight unit as claimed in claim 1 further
20 comprising a diffuser plate mounted at the front opening of the case in front of
21 the shielding mask.

22 13. The illuminating backlight unit as claimed in claim 12 further
23 comprising a diffuser sheet laid on top the diffuser plate.

24 14. The illuminating backlight unit as claimed in claim 12 further

1 comprising a prism sheet laid on top the diffuser plate.